AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated below. The language being added is underlined ("__") and the language being deleted contains either a strikethrough ("——") or is enclosed by double brackets ("[[ ]]").

LISTING OF CLAIMS

1. (Currently Amended) A video system comprising:

a video processing circuit that receives a picture and provides video compression by using an optimal macroblock mode of operation, the optimal macroblock mode of operation being identified by processing at least one macroblock of the picture, the processing being performed independent of other macroblocks contained in the picture, wherein the video processing circuit includes an encoder, the encoder comprising:

a motion estimation circuit that identifies an optimal motion vector by processing at least one macroblock contained in the picture, wherein the processing is carried out independent of other macroblocks contained in the picture; and

a mode selection circuit that identifies the optimal macroblock mode of operation, wherein the mode selection circuit identifies the optimal macroblock mode of operation by using a rate-distortion model, where the rate-distortion model comprises an overall macroblock mode distortion D that is defined by a model equation $D = D^{AC} + D^{DC}$, wherein D^{AC} is a distortion due to AC coefficients and D^{DC} is a distortion due to DC coefficients.

2-3. (Canceled)

4. (Original) The video system of claim 3, where D^{AC} is a model equation that is defined by $D^{AC} = k_1 f(\sigma) g(R_{AC})$, wherein $f(\sigma)$ and $g(R_{AC})$ are two functions, σ is a measure of deviation of AC coefficents, R_{AC} is an allocated rate for encoding AC coefficients, and k_1 is a first numerical parameter that comprises at least one of a fixed number, an estimated number, and a number that is dynamically determined during a frame of the picture.

5. (Original) The video system of claim 4, when $f(\sigma) = \sigma^{k_2}$, wherein k_2 is a second numerical parameter that comprises at least one of a fixed number, an estimated number, and a number that is dynamically determined during a frame of the picture.

6. (Original) The video system of claim 4, when $g(R_{AC}) = e^{-k_3 R_{AC}}$, where k_3 is a third numerical parameter that comprises at least one of a fixed number, an estimated number, and a number that is dynamically determined during a frame of the picture.

7. (Original) The video system of claim 4, when R_{AC} is defined as $R_{AC} = R_{total} - R_{hdr} - R_{mv} - R_{DC}$, wherein R_{total} is a target total number of bits for the at least one macroblock, R_{hdr} is a rate of encoding a header of the at least one macroblock, R_{mv} is a rate of motion vectors, and R_{DC} is a rate of the DC coefficients.

8. (Original) The video system of claim 3, wherein D^{DC} is calculated using a mean intensity value over the at least one macroblock, and a quantization is carried out using a fixed step size.

9. (Original) The video system of claim 3, wherein D^{DC} is equal to zero.

10. (Original) The video system of claim 3, wherein the optimal macroblock mode of operation is selected as one that minimizes the overall macroblock mode distortion D.

11. (Original) The video system of claim 1, wherein the signal received from the video signal source is at least one of a JPEG signal, an MPEG-x signal, and an ITU-specified H.26x signal.

12 – 23. (Canceled).

24. (Currently Amended) A video system comprising:

means for receiving a picture and providing video compression by using an optimal macroblock mode of operation, the optimal macroblock mode of operation being identified by processing at least one macroblock of the picture, the processing being performed independent of other macroblocks contained in the picture, wherein the means for receiving a picture and providing video compression includes an encoder, the encoder comprising:

means for identifying an optimal motion vector by processing at least one macroblock contained in the picture, wherein the processing is carried out independent of other macroblocks contained in the picture; and

means for identifying the optimal macroblock mode of operation, wherein the means for identifying the optimal macroblock mode of operation identifies the optimal macroblock mode of operation by using a rate-distortion model, where the rate-distortion model comprises an overall macroblock mode distortion D that is defined by a model equation D = DAC + DDC, wherein DAC is a distortion due to AC coefficients and DDC is a distortion due to DC coefficients.

25-26. (Canceled)

27. (Previously Presented) The video system of claim 26, where D^{AC} is a model equation that is defined by $D^{AC} = k_1 f(\sigma) g(R_{AC})$, wherein $f(\sigma)$ and $g(R_{AC})$ are two functions, σ is a measure of deviation of AC coefficents, R_{AC} is an allocated rate for encoding AC coefficients, and k_1 is a first numerical parameter that comprises at least one of a fixed number, an estimated number, and a number that is dynamically determined during a frame of the picture.

28. (Previously Presented) The video system of claim 27, when $f(\sigma) = \sigma^{k_2}$, wherein k_2 is a second numerical parameter that comprises at least one of a fixed number, an estimated number, and a number that is dynamically determined during a frame of the picture.

29. (Previously Presented) The video system of claim 27, when $g(R_{AC}) = e^{-k_3 R_{AC}}$, where k_3 is a third numerical parameter that comprises at least one of a fixed number, an estimated number, and a number that is dynamically determined during a frame of the picture.

30. (Previously Presented) The video system of claim 27, when R_{AC} is defined as $R_{AC} = R_{total} - R_{hdr} - R_{mv} - R_{DC}$, wherein R_{total} is a target total number of bits for the at least one macroblock, R_{hdr} is a rate of encoding a header of the at least one macroblock, R_{mv} is a rate of motion vectors, and R_{DC} is a rate of the DC coefficients.

31. (Previously Presented) The video system of claim 26, wherein D^{DC} is calculated using a mean intensity value over the at least one macroblock, and a quantization is carried out using a fixed step size.

32. (Previously Presented) The video system of claim 26, wherein D^{DC} is equal to zero.

33. (Previously Presented) The video system of claim 26, wherein the optimal macroblock mode of operation is selected as one that minimizes the overall macroblock mode distortion D.

34. (Previously Presented) The video system of claim 24, wherein the signal received from the video signal source is at least one of a JPEG signal, an MPEG-x signal, and an ITU-specified H.26x signal.